alone can be a virtuous, and therefore a happy one. The chronicles, the crimes of every country, furnish abundant evidence how great a mass of wickedness has been occasioned by the exacerbation of disease. This is a feature of my subject too little insisted upon, and perhaps, not sufficiently understood."

Many scientific, but perfectly familiar explanations of the chemical components of the air we breathe, and of the functions of the lungs in maintaining the vitality if the blood follow: the description of the fearful changes going on in crowded rooms bears strongly upon our subject.

"Since, then, respiration completely changes the constitution of the air, consuming the vital portion, and substituting for it a gas of the most deleterious nature, it follows, that a constant and copious supply of fresh air is indispensable to healthy existence. Were it needful, a long list of fatal events caused by breathing impure air might be given. It will be sufficient to refer to the oftencited catastrophe of the Black Hole at Calcutta; which dreadful as it was in itself, has yet, perhaps, been productive of extensive good, by forcibly impressing on men's minds the necessity of paying attention to the laws of nature. Such cases are happily of rare occurrence, but the destructive effects of breathing a moderately vitiated atmosphere, though not so appalling, are not less certain. The inhalation of such air may not leave any marked traces of its baneful influence, but slowly and surely, though imperceptibly, it is working evil —the body is weakened and rendered incapable of withstanding the attacks of disease by being deprived of the nourishment of healthy blood, yet because the process is gradual, it is overlooked; but it is evident, from the foregoing exposition of the function of respiration, that every inspiration of impure air must be injurious. * * * * In the construction of houses and public buildings there is, for the most part, but little care taken to provide for due ventilation, which is capable of being regulated on the strictest scientific principles. * * * * * It is sincerely to be hoped that more attention will be paid to this subject, and that provision for perfect ventilation will not in future be overlooked by architects."

On light, God's beautiful and cheering light, shut out from the courts and alleys tenanted by the sons of labour, we have these remarks:—

"That light exercises a great and beneficial influence on the body may be inferred from the ruddy, fresh-coloured complexions of those who live in the country, and engage in agricultural occupations, compared with the dull, sallow countenances of miners, criminals confined in dark dungeons, and other persons long secluded from the solar beams; the effect is the same in kind on those who reside in narrow lofty streets. The complexion depends upon the condition of the blood, and it is well known that light co-operates with the oxygen to communicate to the blood its scarlet hue."

On the subject of labour, Mr. Curtis offers some consolations by way of comparison.

"Persons whose circumstances enable them to dispense with labour, and who, having no activity of mind, pass their days in listless idleness, are, of all men least to be envied—ennui, hypochondriasis, indigestion afflict these unhappy mortals, who not seldom put an end to their miserable existence by suicide. Let the man who depends for subsistence upon the toil of his muscles or of his brain console himself by pondering on these facts; and let those who are independent of labour recollect that man is a social being,' and that the Creator has ordained that useful exertion should be essential to individual happiness. * * * It is, however, deeply to be lamented that, notwithstanding the vast improvements that have been of late years effected, so many occupations of life are still destructive of human health and happiness. It is to be feared that many of the causes of these evils must long remain in operation, and that some of them are immoveable. But there can be no doubt, that most occupations are injurious, more by reason of the excessive length of the time of labour, than of any inherent unhealthy tendency."

We may on no account omit the context, which occurs after passing over a few pages; it portrays the spirit of the age in a strain ranking with literary diction of the highest class.

"The present age may be termed the commercial era. The spirit of trade prevails over the whole community, to the exclusion of almost every other feeling, and brings into subordination to itself the few feelings that it admits to take possession for a time of the minds of our countrymen. The loftiest sentiments of the soul, destined to rule therein, and nature, are often made subject to the low, the debasing love of gain. This state of society may be one through which it is necessary we should pass in our progress towards a higher civilization; but it is one, notwithstanding, which, inflicting as it does so many evils, both moral and physical, upon those who are in it, it is the duty of every one, to the extent of his power, to endeavour to correct."

Mr. Curtis has no need of our eulogium, but he has our thanks for the good service he renders us. His "Observations on Health" stands first in the list of really useful popular works, and will retain that position, both from the soundness of its precepts, and the agreeable manner in which they are conveyed; familiar as the subjects treated of may be considered, we give an instance of their bearings in illustration of causes which injuriously affect masses of the people, and we feel assured that the author will rejoice in our associating his labours with those now exerted to obtain Remedies for the alarming evils which are the subject of this paper.

LIFE ASSURANCE.

No. I.

LIFE ASSURANCE! the very term savours of importance, and the more the subject is canvassed, the wider will be the field opened for general participation. We entertain it on public grounds, and as having hitherto been treated with little regard to a popular understanding of its merits; but we do so without invidious motives, and solely as friends and supporters of a principle at once so extensively useful and so easily applied. Indemnity against the casualty of death is sold at a price! THAT IS THE GREAT FEATURE, and the thousand consolatory as well as equitable purposes to be accomplished by this means are the results.

The history of the first glimmerings of light upon a subject by no means antiquated, and upon which modern science is considered to have exhausted the most finished touches, is curious; the isolated labours of the philosopher, and the abstract calculations of a few mathematicians of the last century, have given birth to a system now urged forward with extreme perseverance, and supporting numerous magnificent establishments, but upon plans and rates of premium so essentially different as to invite inquiry.

While it really does appear that the public are largely aware of the prominent advantages to be derived from the system, the selection of an office is more the effect of impulse on the one hand, or the intervention of interested agency on the other: and, as we have just observed, the great variety of plans that have sprung up, and the discrepancy in premiums, or prices, in so considerable, that an individual acting independently would have some difficulty in deciding to which he might best entrust the fulfilment of the claims of his nearest ties, when death shall have removed him from personal interference on their behalf.

Now it seems to us that there should remain no such uncertainty upon this momentous point, but that the knowledge requisite for judicious selection should be co-extensive with the system itself. Life Assurance in its simplest form, that of *Mutual Assurance*, without original capital, and where participation is equal and general, is least cultivated. Under trading companies, it has been made to assume other modes, in which, and in consideration of first advances, or subscribed capital, the participation of the assured is more or less diminished, though the premiums may be greatly in excess. Military and Naval risks form another branch of Commercial Life Assurance, and civil risks are also undertaken upon lives already affected by disease; and finally, new plans are proposed, combining assurance on lives with the very different business of an advance of loans.

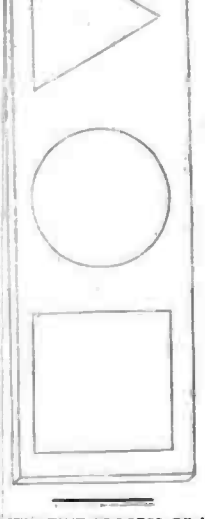
It is, however, with the right understanding of the *principle*, or rather of the *data*, from which only can and ought to be deduced sufficient warranty for transactions contingent upon life, that we propose to deal, and not with the pretensions of the several offices to preferable attention. We neither assume to know, nor seek to be acquainted with, their condition, means, or motives; our allusions, where such are unavoidable, will therefore be principally confined to the older offices, whose long-standing and extraordinary opu- ultimately happen to others of more recent date, where features wholly extraneous to the simple analogies between premium and risk render a long and successful course somewhat doubtful.

It may fairly be presumed, that in the elucidation we propose there are few persons entirely uninterested; the highest classes of society have long been familiar with the utility of Life Assurance, and the middle classes are every day approaching it. The number and moderate amount of the risks of the latter will perfect the averages, and secure the stability of those offices where sufficient, but not excessive, premiums are demanded, and where also complexity appears least interwoven with a business, which in its nature is clear, definite, and easily conducted. Even the artificer, though his means may not reach an assurance for hundreds, should know the proportionate rate which he ought to contribute, through his trade-society, or club, for the ten or twenty pounds to be paid from its funds at his death.

GEOMETRICAL EXERCISES.

MR. EDITOR,—Having amused myself by the solution of the problem given in your last, I beg to propose another for your readers; it is to cut three holes in a thin piece of wood, as shewn by the accompanying diagram, and to cut a single piece, a solid, so as to fill each hole and pass through, that is closely fitting. Yours, &c.,

SAM TWAIN.



THE LITHOTINT PROCESS OF HULLMANDEL.

THE drawing having been finished by the artist on the stone with lithographic ink mixed with water to produce the various shades, is covered with gum-water, and weak nitric acid to fix it; after waiting a sufficient time to dry, a solution of resin and spirits of wine is poured over the stone, and as this ground contracts by drying, it cracks into millions of reticulations, which can only be discovered by the use of a microscope; very strong acid is then poured over the aquatint coating, which, entering all the fissures, produces the same effect on the stone as the granulations of the chalk by the ordinary process. The resin protects the drawing everywhere but in the cracks, and having remained a sufficient time to act on the unprotected parts of the drawing, the ground is washed off, and all appearance of the subject on the stone vanishes, until, ink being applied by the roller in the ordinary way, it is reproduced, and ready for taking off the required number of impressions, which in some cases have extended to the number of 2,000.

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